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ABSTRACT

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PROGRAMME COSTING - A LOGICAL STEP TOWARD IMPROVED MANAGEMENT

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Abstract

The analysis of costs of university activities from a functional or programme point of view, rather than an organizational unit basis, is not only an imperative for the planning and management of universities, but also a logical method of examining the costs of university operations. A task force of the Committee of Finance Officers - Universities of Ontario has been developing a methodology for programme costing which can be adopted for use by any of the province's universities. Since programme costing is seen as a budgeting tool, the system is being designed primarily for internal management use where its potential is greatest. This paper discusses some concepts and misconceptions of programme costing, and outlines the characteristics of the proposed system: emphasis on definitions and allocation rules, the costing of support functions and the identification of their contribution to the costs of instruction, research, and community service, the separation of non-specifically funded research from instruction, and the realization that the costs derived are historical average expenditures rather than accurate or standard costs.

PROGRAMME COSTING - A LOGICAL STEP TOWARD IMPROVED MANAGEMENT

A paper presented to the Canadian Session, Association for Institutional Research Forum, May 15, 1973, in Vancouver, British Columbia by Ronald N. McDougall, Council of Ontario Universities

The analysis of costs of university activities from a functional or programme point of view rather than an organizational unit basis is not only an imperative for the planning and management of universities, but also a logical method of examining the costs of university operations. In recent years, much has been said about programme costing, programme budgeting, PPBS, etc., in universities. There can be no question that great strides have been taken in improving the state-of-the-art of university cost analysis, in particular by the work of the National Centre for Higher Education Management Systems at WICHE, but we have only cracked the surface as far as application of these systems is concerned. This paper discusses some concepts and misconceptions of programme costing and outlines one development in the province of Ontario arising out of the interest in such cost analysis by a group of university financial administrators.

In 1972, the Committee of Finance Officers, an affiliate of the Council of Ontario Universities, and representing each of the fourteen universities in the province, established a task force to investigate needs in the area of financial information systems, and functional or programme costing and budgeting. As a first step, the Task Force suggested that a system for arriving at programme costs be recommended for use by Ontario universities, and it appointed a two-man working committee to develop a draft manual describing such a system. In doing so, the aim of the Task Force was not to force any university to adopt the recommended system, but simply to propose costing methods and to conduct tests of their validity and usefulness. It was felt that it was best to examine the problem centrally even though some universities were working on systems individually, because it is more economical, and because it can be useful to the smaller universities unable to devote resources to such a project. In addition, a wider variety of input to the development of the system is provided by the involvement of a number of institutions.

A draft manual describing the costing system was produced in February and has been distributed to the universities for discussion of its applicability.

What do we mean by programme costing? This question of definition usually arises at the beginning of any discussion of the topic. First, the term programme. The Task Force rather generally defines a <u>function</u> as a broad grouping of activities of a similar nature: primary functions are those which relate to the basic purposes of the university, and support

functions are groupings of similar activities that are essential to the execution of the main functions of the university, but which in themselves are not primary functions. For example, Instruction, Research and Community Service are defined as the primary functions and Academic Support Services, and General Administrative Services are support functions. All functions can be subdivided into sub-functions, e.g., Instruction is separated into Graduate and Undergraduate Instruction and Academic Support Services are divided into Library Services, Academic Computer Services, and Audio-Visual Services. Programmes are a further subdivision of sub-function. In Instruction, a programme is by degree and discipline. In Research, a programme is research by discipline. Programmes are not defined for the other subfunctions as it is not felt necessary to subdivide them further. This will be clarified later when we look at the programme structure of the system.

The term "cost" as used in this paper refers to historical expenditures rather than any standard cost. The costing system avoids the question of what reasonable costs for an activity should be. This is a drawback of most costing systems, as it ignores the fact that the activity may have been underfunded in the past, but it is doubtful how standard costs can be derived without knowledge of historical expenditures. The system also avoids inclusion of opportunity costs which would be necessary in any cost-benefit studies.

Programme costing is seen to be useful primarily as an internal budgeting tool. In many ways it is simply a logical and systematic way of organizing a rather large mass of complex and often incoherent data. Its prime importance at the institutional level is for operations control and for budgeting. Programme costing can only improve management by providing administrators with better cost data, with information which relates the dollars spent to the activities being performed, and consequently to the way in which plans should be drawn up. Universities already recognize this because they do programme or project costing for specific activities on an ad hoc basis when the need arises. A programme costing system merely gives a comprehensive framework for such information, identifies the components of these costs, and at the same time enables management to obtain cost data at various levels of aggregation. It is precisely this type of data that is badly needed by deans and department chairmen for justifying budget requests or for planning new programmes. On the other hand it is extremely useful to budget committees in assessing budget requests.

Industry has done some kind of programme costing for years, and governments at both the federal and provincial levels organize their budgets on a programme basis. For many reasons, the cost accounting exercises of industry cannot be paralleled in the universities and do not make sense in the university context. We are not in the profit-making business nor do we have pricing policies to set. However, we are forced to be extremely cost conscious and it has become imperative that more than expenditures by type must be examined.

Despite this, programme costing is not readily accepted by the university community, primarily because of a number of misconceptions which have become very apparent in the work of the Ontario finance officers.

(1) that programme costing is a budgeting system. It may provide inputs to the budgeting process and may be one of the first steps towards organizing the budget on a programme basis, but it is not programme budgeting. It is historical data, not future data. Even programme budgeting (if it ever becomes feasible in universities) will not nor cannot replace the traditional line-by-line budget by organizational unit.

(2) that the development of a programme costing system must be necessarily expensive to implement. It will be costly, but costs can be cut if the expertise available within the university system is fully utilized without reliance on outside consultants. The largest costs will be incurred for preparation of the data files. Much of this data is needed within a university whether a programme costing system is being implemented or not.

(3) that by developing a programme costing system, attempts are being made to quantify all decision-making while disregarding the qualitative side. Programme costing is merely upgrading the quantitative side of the argument which often seems to be lacking or rather sketchy in many planning and budgetary sessions. The need at this time of financial constraint is for improved cost data, but the good quality arguments should and will always prevail.

(4) misconception on the part of many faculty members that the requested information re the allocation of their time among different types of activity will be used for their promotion or salary considerations. There must be some way of distributing the cost of faculty salaries to the appropriate programmes. If this were done centrally on an arbitrary basis without input from faculty members, there would be claims that the parameters were not valid. As a result of this, the questionnaire approach attempts to obtain better data with the participation of faculty members. In Ontario, we have added two faculty members to the Task Force to help with problems of this nature and to provide input from the faculty side.

There is a general fear that if costs or historical expenditures are produced on a programme basis, governments, both provincial and federal, will demand the information and will use the detailed data for inter-university comparisons and for funding on the basis of the lowest cost

programme. The difficulties of standardization of data across a number of universities, the diversity in the number and types of programmes offered by different institutions and the differing sizes and emphases of universities dictate that detailed programme cost information is not useful for government funding purposes. It can, at an appropriately high level of aggregation, provide rough cost indicators for provincial or regional planning, e.g., approximate cost trends, spending priorities. Similarly, at the federal level such aggregate programme costs could be useful in federal-provincial fiscal arrangements negotiations, or in manpower planning policy, i.e., costs of producing particular types of qualified manpower.

However, the prime benefactor of programme cost information is the individual university.

I will now turn to a description of the costing system being proposed in Ontario. It is probably best classified as a modified WICHE system although it draws heavily on work done in many jurisdictions. It has the following characteristics:

- emphasis throughout on detailed definitions
- costing of support functions and the identification of their contribution to the costs of Instruction, Research, and Community Service.
- inclusion of expenditures from all operating funds (general purpose, ancillary enterprise, trust and endowment, and sponsored research). The exclusion of the capital fund is somewhat arbitrary in that the traditional distinction between capital and operating by universities is made on the source of funds rather than on any strict definition of what constitutes a capital asset.
- the separation of the cost of non-specifically funded research from those of instruction and funded or sponsored research. This is probably the most controversial aspect of the system, and undoubtedly one of the most difficult and arbitrary. However, the Task Force felt that the functions and subfunctions should not be tied to the way in which funds were made available. If we separated out sponsored research and called everything else instruction, we would be making such a connection. The Non-Specifically Funded Research would include research and other activities which enable the faculty member to keep pace with new developments in his discipline, general reading and discussions not directly related to preparation of instruction material, as well as research projects in some arts and humanities disciplines which might be classified as sponsored research in a scientific discipline.
- the use of a faculty questionnaire for obtaining information on the distribution of faculty time for allocation of faculty salaries.

The main steps in the system are the specification of the programme structure and four allocation phases:

I - Initial allocation of total expenditures from traditional format to all subfunctions, both primary and support

II - allocation of costs from support functions to the three primary functions

III - analysis of costs collected in the primary functions to the programme and sub-programme level

IV - a display of costs on a basis comparable to that used in the Ontario operating grants formula (by broad instructional programme categories). This phase is not crucial to the system and is optional for use at the individual university level. In fact, the method of deriving such a display has not yet been fully developed.

The programme structure is fundamental to the costing system because it dictates the organization of the cost information to be produced by the system.

- 4 levels of hierarchy: function, subfunction, programme, subprogramme.

3 primary functions
5 support functions

Key Points:

(a) split of instruction between graduate and undergraduate

(b) separate subfunction for non-specifically funded research and scholarly activities. There is no reason why we should pay more attention to research funded by the National Research Council than that done by a professor without a specific allocation of funds. It is acknowledged that Instruction and Research are interdependent and the distinction between them is vague, but yet it is still important for university administrators to know the allocation of resources to each of these activities.

Phase I of the allocation starts with the expenditures by type of expenditure categories within department or organizational unit. Generally, the types of expenditure can be grouped into a number of relatively aggregate categories, e.g., salaries, equipment and supplies. In certain cases, it is necessary to isolate certain types of expenditure for allocation, e.g., books and periodicals in the library. Each type of expenditure is distributed to the appropriate subfunction, some require allocation rules (faculty salaries), others not (library salaries directly into subfunction 5.1 Library Services). At the end of Phase I, we have expenditures by subfunction for all primary and support functions. Incidentally, the suggested questionnaire for the Academic Activity Analysis is to be administered through the department chairmen. It is a detailed form,

although it can easily be made more aggregate depending on how detailed the allocation rules remain. Alternatives to this approach for allocating professorial time are needed, whether by aggregation, sampling techniques, or some new method.

Phase II is the allocation of the expenditures accumulated in support subfunctions back to the primary functions. This process uses the "step-down" approach which is based on the premise that support subfunctions may contribute directly to any primary or support subfunction which has a higher order ranking. In our system, the lower-ranked subfunctions are those of Physical Plant and the remaining subfunctions are arranged in ascending order as you move to the left in the programme structure.

The allocation rules are relatively simple, and of course, arbitrary. However, all allocation rules are by definition, arbitrary. Some examples of allocation rules: physical plant expenditures are distributed on the basis of square feet by type of space, computing expenditures on the basis of usage, library costs are allocated primarily on the basis of circulation.

The final Phase (III) of the system is to analyze the expenditures accumulated in the subfunctions of Instruction and Research. Instructional expenditures are broken down to the programme and subprogramme level using student enrolment statistics. The direct costs of Research are already collected by programme, but it is necessary to apportion the costs coming from the supporting subfunctions.

The optional Phase IV, that of relating all expenditures to broad groupings of instructional programmes only is still at the conceptual stage.

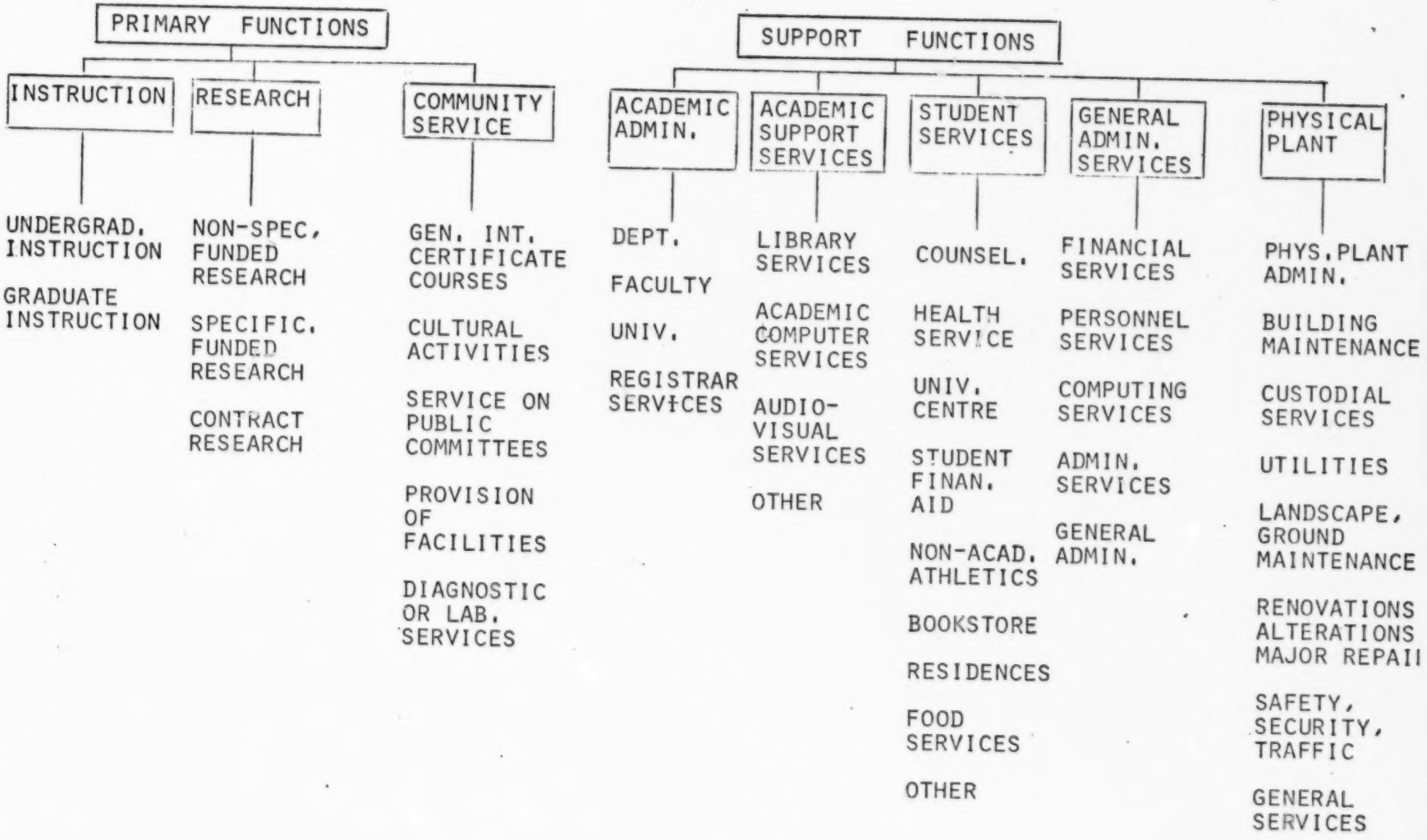
To implement such a system, there is the problem of data. The data requirements of this costing system are admittedly detailed in some areas, e.g., square feet by type of space, academic activity analysis. However, the enrolment data should be available in most universities.

Reaction to date to the proposed system by the Ontario universities has been mixed. There is support for the concepts of the system and for the development of costs on a functional or programme basis. Major criticism is levelled at the Academic Activity Analysis questionnaire for being too detailed and an inappropriate way for allocating faculty salaries. However, no alternative methods have been suggested. There is much concern that the cost of such a system will be too high, primarily because of data requirements. This would lead to the conclusion that a more aggregate system might be more acceptable. However, a higher level of aggregation would lead to more assumptions and estimation.

Future plans call for testing the costing system in one or more universities. Modifications will be made on the basis of these tests and the comments from the universities.

Progress is slow, but this fact should not be allowed to stand in the way. In this period of financial constraint in higher education, functional cost analysis should not be seen as a bureaucratic endeavour by university accountants and institutional research officers, but as a necessary step relevant to all administrators, faculty, and students of the university community.

PROGRAMME STRUCTURE



PROGRAMME STRUCTURE (CONTD)

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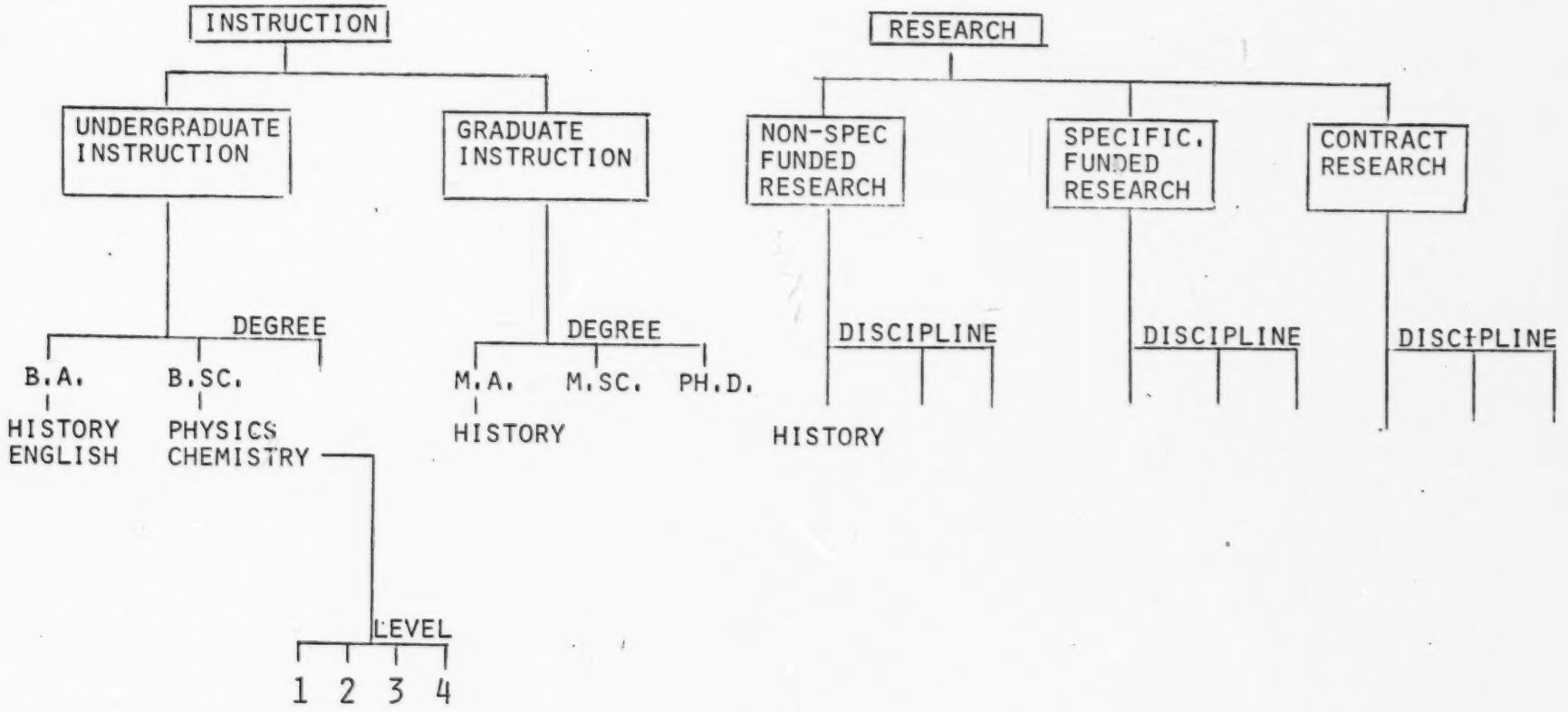
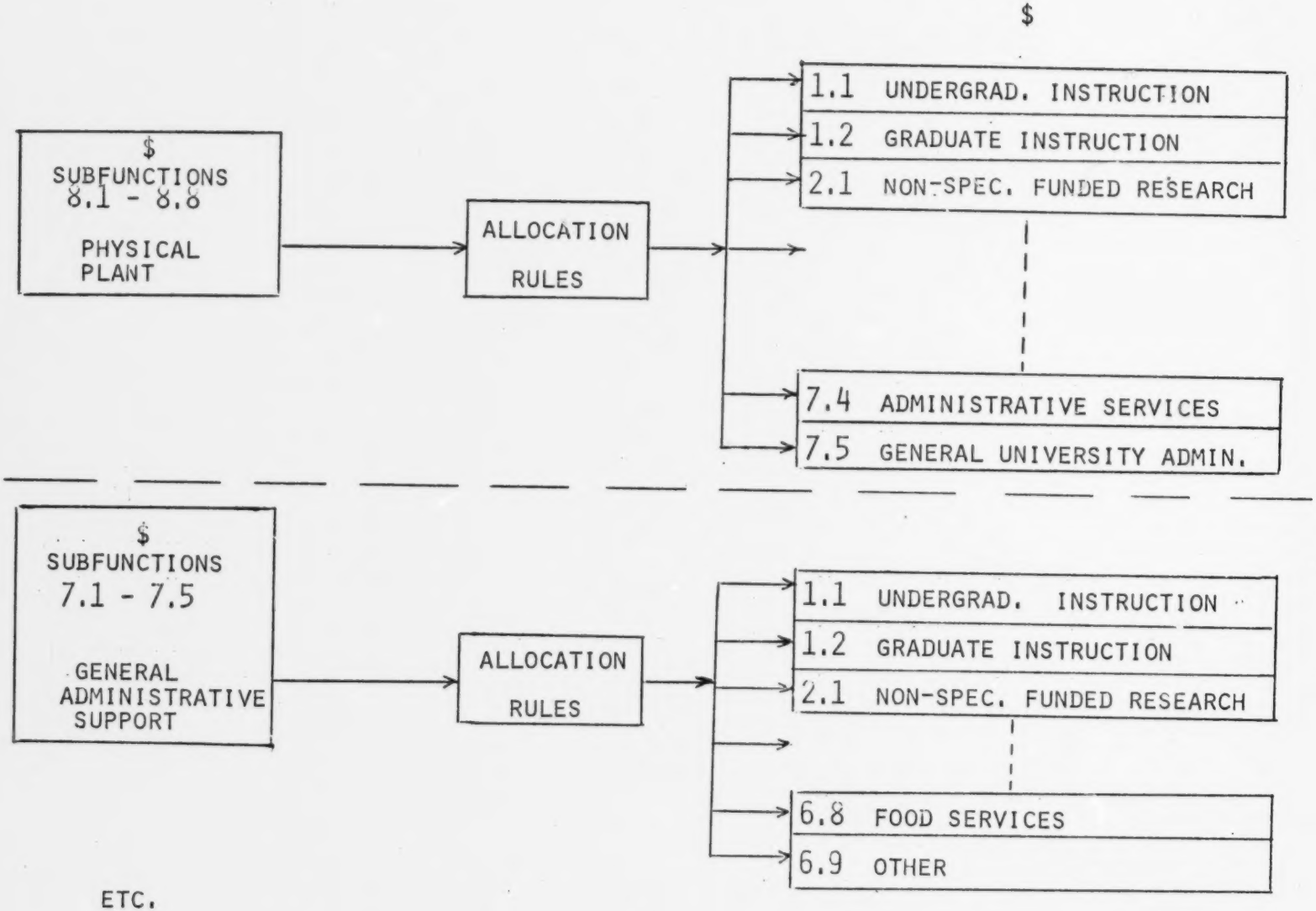


PHASE I - INITIAL ALLOCATION OF TOTAL EXPENDITURES TO EACH SUBFUNCTION

	SUBFUNCTIONS / ACCOUNT CLASS.	1.1 UNDERG. INSTR.	1.2 GRAD. INSTR.	2.1 NON-SPEC. FUNDED RESEARCH	2.2 SPEC. FUNDED RESEARCH	2.3 CONTRACT RESEARCH	3.1 GEN. INTEREST AND CERTIF. COURSES	3.2 CULTURAL ACTIVITIES	5.1 LIBRARY SERVICES	8.8 GENERAL SERVICES	ALLOCATION RULE
ACADEMIC DEPARTMENTS	ACADEMIC SALARIES AND FRINGE BENEFITS	X	X	X	X	X	X	X			ACAD. ACTIVITY ANALYSIS
	ACADEMIC SUPPORT STAFF SALARIES AND FRINGE BENEFITS	X	X	X	X	X	X				CONSULTATION WITH DEPT. CHAIRMAN
	CLERICAL AND TECH. STAFF SALARIES AND FRINGE BENEFITS	X	X	X	X	X					" "
	EQUIPMENT, SUPPLIES, OTHER (INST. AND RES.)	X	X	X	X	X	X				" "
	EQUIPMENT, SUPPLIES, OTHER (OFFICE)										N.A.
LIBRARY	SALARIES AND FRINGE BENEFITS								X		N.A.
	BOOKS AND PERIODICALS								X		N.A.
	EQUIPMENT, SUPPLIES, OTHER								X		N.A.

PHASE II - ALLOCATION OF EXPENDITURES FROM SUPPORT SUBFUNCTIONS TO PRIMARY SUBFUNCTIONS



PHASE III - ANALYSIS OF INSTRUCTION AND RESEARCH COSTS BY PROGRAMME

1.2 GRADUATE INSTRUCTION		
SOURCE	LEVEL	AMOUNT
1.2	COURSE	X
4.0	FUNCTION	X
5.0	SUBFCN	X
6.0		
7.0		
8.0		

→ ALLOCATION ON ENROLMENT BASIS →

1.2 GRADUATE INSTRUCTION		
PROGRAMME	SOURCE	AMOUNT
M.A.HISTORY	1.2	X

2.1 NON-SPEC. FUNDED RES.		
SOURCE	LEVEL	AMOUNT
2.1	PROGRAMME	X
4.0	FUNCTION	X
5.0	SUBFCN.	X
7.0		
8.0		

→ ALLOCATION ON BASIS OF $ PREVIOUSLY DISTRIBUTED →

2.1 NON-SPEC. FUNDED RESEARCH		
PROGRAMME	SOURCE	AMOUNT
HISTORY	2.1	X